Neal Smith National Wildlife Refuge

School visits to the Prairie Learning Center (PLC):

Mission: Study Neal Smith NWR and use the Iowa prairie ecosystem as an integrating and motivating context in each related curricular area to engage school children at all grade levels in real world, field-based learning experiences.

Goals:

All student visits and developing school partnerships will include:

1. A search for *wonder*
2. Nature journals
3. A place-based curriculum, focused on studying the land and wildlife at Neal Smith NWR, while highlighting global connections when appropriate
4. Integrated Phenology study, tracking changes overtime
5. Studying and modeling past and present naturalists (e.g. Rachel Carson, Aldo Leopold, Byrd Baylor, Ernest Seton, Lewis and Clark) as a pathway to exploration
6. Inviting all school children, teachers, and chaperones to become naturalists, or people who always ask wonder questions and make discoveries about the environment
7. Developing the skills of critical thinking, problem solving, teamwork, stewardship, and citizenship
8. Connecting 1st American and early settlement history when appropriate

Guiding principles:

- The main subject of any school group visit to PLC should be the tallgrass prairie ecosystem. The prairie and the life in it should be the main focus of all activities.
- A minimum of materials and objects will be required for all activities; realizing that materials and equipment distract from field study.
- This document and enclosed lessons should be continually reviewed and adapted as Neal Smith NWR and environmental education evolve.

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Fall Units

"The milkweed pods are breaking,
And the bits of silken down
Float off upon the autumn breeze
Across the meadows brown." - Cecil Cavendish, *The Milkweed*

3RD Grade:

1. Plant Lifecycles:

   Objective: Using a KWL approach, students observe and sketch plant lifecycles found on the prairie and reflect on how prairie plants transform during each stage.

   Based on their prior knowledge about the lifecycle of a plant, students will work in groups to develop investigative questions about a plant's lifecycle. Students will be encouraged to ask questions that they may find answers to while outdoors. Students make quadrants in their nature journals and label each square; "Seeding", "Sprouting", "Blooming", and "Lifecycle" discoveries. Next, students search outside to find and sketch plants that are in various growing stages and record them in the appropriate quadrant. Later, students share their discoveries and their nature journals by participating in a silent "nature journal walk" exercise. During the exercise, students leave their journals open on the floor and students walk around in a circle and observe each person's entry. Afterwards, students are encouraged to share what they learned about plant lifecycles and prairie plants in the fall season.

2. Sticky Seed Situation:

   Objective: Students collect, observe, and categorize different prairie seeds.

   After reading What Kinds of Seeds Are These? by Heidi Bee Roemer, students make predictions about different types of seeds they will find outside (e.g. possible seed sizes, shapes, colors, seed dispersal adaptations). Next, students head outside and collect different types of seeds. Students devise a strategy for grouping seeds based on similarities and differences. In their nature journal, students must sketch, write and explain why and how they classified the seeds. Students will reflect and are then encouraged to share their discoveries with the class.

3. The Secrets of Watching Wildlife

   Objective: Students choose a special spot on the prairie where they can record their thoughts, emotions, and observations about the prairie in their nature journal.

   A field leader reads excerpts and summarizes Jim Arnosky's book, The Secrets of Watching Wildlife. Students discuss Arnosky's observations, notes, and the secret tips he discloses for finding wildlife. While inside, the field leader has students practice some of Arnosky's tips. Students spread out in the room and the field guide coaches them on going alone, taking a wide-range of vision, sitting downwind, blending into their environment, and being still. Once the students demonstrate they understand these skills, the field guide takes them outside. Students bring their nature journals and head into the prairie to practice "the secrets of watching wildlife". Students record their thoughts, emotions, and observations in their nature journal. Once finished, they come inside and are encouraged to share their discoveries. They reflect on which "secrets" were hardest or easiest for them to do and which ones worked best for them.

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Spring Units

"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change." – Charles Darwin

Third Grade:

1. **Prairie Plants Change:**

   Objective: Students make predictions and begin an investigation to observe and record the various changes that prairie plants go through in the spring season.

   Students refer back to their journal entries on prairie plants in the fall. (If students do not have fall journal entries, they will speculate as to how prairie plants may have looked in the fall). They are asked to share the colors, lifecycle stage, and other details they observed about fall plants. The field instructor uses a T-chart and labels one side as "Fall Prairie Plants" and the other side as "Spring Prairie Plants". Under the "Fall" side, the field leader records students' observation from their fall plant investigation. Next, students make predictions and ask questions about how prairie plants may look during the spring recording these in their nature journal.

   Outside, students choose a prairie plant and use descriptive words and detailed sketches to portray prairie plants during spring and answer their inquiry questions. Afterwards, students share their discoveries as the field-leader records them under the side of the T-chart labeled "Spring". Using the class's T-chart, students are asked to explain how and why prairie plants change through various seasons. Students record in their field journals, the group's culminating discoveries of how prairie plants change through the seasons.

2. **Prairie Invertebrates:**

   Objective: Students will ask and answer their own questions about prairie invertebrates through a basic investigation.

   The field leader introduces the term "invertebrate" and how to look for them by reading the book Under One Rock: Bugs, Slugs, and other Ughs by Anthony D. Fredericks. Students work in groups and ask investigative questions about prairie invertebrates. Students go outside and search through the soil and plants for invertebrates and observe, collect, and record data related to their discoveries. Students share their data and discuss the importance of these animals for the prairie.

3. **Prairie Bird Investigation:**

   Objective: Students participate in a scientific investigation about birds that is driven by their own inquiry.

   Students share what they know about birds and what they wonder about birds. Students choose one investigative question to search for while they are outside. Then they go on a hike to seek answers to their questions. While outdoors, students sit and listen to a short excerpt about May birds from Aldo Leopold's book, A Sand County Almanac. Students practice standing still, listening for sounds, and waiting for bird movement in order to make more discoveries about birds. Students record data in their nature journal that supports the answer to their question. To conclude the lesson, students discuss what they learned by answering their investigative questions.